

## AMENDMENT

### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for creating a nucleic acid comprising the steps of:
  - (a) annealing a defined primer nucleic acid to at least one first single stranded template nucleic acid,
  - (b) performing a first extension by extending the primer nucleic acid employing the first template nucleic acid to form an extended nucleic acid,
  - (c) denaturing the extended nucleic acid from the first template nucleic acid,
  - (d) annealing the extended nucleic acid to at least a second single stranded template nucleic acid whose sequence is not identical to the first template nucleic acid,
  - (e) performing a second extension by extending the extended nucleic acid employing the second template nucleic acid to form a twice extended nucleic acid,
  - (f) denaturing the twice extended nucleic acid from the second template nucleic acid,
  - (g) annealing the twice extended nucleic acid to a third template nucleic acid,
  - (h) performing a third extension by extending the twice extended nucleic acid employing the third template nucleic acid to form a thrice extended nucleic acid;
  - (((f))i) adding at least one dideoxynucleotide[, ] or a dideoxynucleotide analog or a dideoxynucleotide derivative before or during at least one two of the first extension, [[or]] the second extension, or the third extension, wherein said dideoxynucleotide, or dideoxynucleotide analog or a dideoxynucleotide derivative is incorporated into said extended nucleic acid, and

(((g))) modifying or removing the dideoxynucleotide[[,]]or dideoxynucleotide analog ~~or dideoxynucleotide derivative~~ from the extended nucleic acid, if a further extension is to be performed.

2-3. (canceled)

4. (currently amended) The method of claim [[2]]1, further comprising at least one additional series of denaturing from a template, annealing to a further template, and performing of extension.

5. (previously presented) The method of claim 4, further defined as comprising between one and about five hundred additional series of denaturing from a template, annealing to a further template, and performing of extension.

6. (currently amended) The method of claim [[2]]1, further comprising adding at least one dideoxynucleotide, ~~or~~ dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ before or during each extension.

7. (currently amended) The method of claim [[2]]1, wherein at least one extension is performed without the addition of a dideoxynucleotide[[,]]or a dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~.

8. (canceled)

9. (currently amended) A method for creating a nucleic acid comprising the steps of:

- (a) annealing a defined first primer nucleic acid to at least one first single stranded template nucleic acid,
- (b) performing a first extension by extending the first primer nucleic acid employing the first template nucleic acid to form a first extended nucleic acid
- (c) denaturing the first extended nucleic acid from the first template nucleic acid,

- (d) annealing the first extended nucleic acid to at least a second single stranded template nucleic acid whose sequence is not identical to the first template nucleic acid, and
- (e) performing a second extension by extending the extended nucleic acid employing the second template nucleic acid to form a twice extended nucleic acid,
- (f) adding at least one dideoxynucleotide[,]~~or~~ a dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ before or during at least one of the first extension or the second extension, wherein said dideoxynucleotide or dideoxynucleotide analog is incorporated into said first or second extended nucleic acid and
- (g) modifying or removing the dideoxynucleotide[,]~~or~~ dideoxynucleotide analog ~~or dideoxynucleotide derivative~~ from the extended nucleic acid, if a further extension is to be performed.

10-11. (canceled)

12. (original) The method of claim 9, further comprising:

- (a) denaturing the twice extended nucleic acid from the second template nucleic acid
- (b) annealing the twice extended nucleic acid to a third template nucleic acid, and
- (c) performing a third extension by extending the twice extended nucleic acid employing the third template nucleic acid to form a thrice extended nucleic acid.

13. (currently amended) The method of claim 12, further comprising adding at least one dideoxynucleotide,~~or~~ a dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ before or during the third extension.

14. (previously presented) The method of claim 12, further comprising at least one additional series of denaturing from a template, annealing to a further template, and performing of extension.

15. (previously presented) The method of claim 14, further defined as comprising between one and five hundred additional series of denaturing from a template, annealing to a further template, and performing of extension.
16. (currently amended) The method of claim 12, further comprising adding at least one dideoxynucleotide, ~~or~~ a dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ ~~present~~ before or during each extension.
17. (currently amended) The method of claim 12, wherein at least one extension is performed without the addition of a dideoxynucleotide ~~[[,]]~~ or a dideoxynucleotide analog ~~or a~~ ~~dideoxynucleotide derivative~~.
18. (currently amended) The method of claim 9, wherein said dideoxynucleotide, ~~or~~ a dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ is removed by at least one exonuclease.
19. (previously presented) The method of claim 9, wherein said first single stranded template nucleic acid or said second single stranded template nucleic acid vary in size, sequence, resistance to cleavage or resistance to exonuclease degradation.
20. (canceled)
21. (previously presented) The method of claim 9, wherein said method produces a plurality of extended nucleic acids.
22. (previously presented) The method of claim 21, wherein said plurality of extended nucleic acids comprises an extension ladder.
23. (previously presented) The method of claim 21, wherein said plurality of extended nucleic acids vary in length, sequence, resistance to cleavage or resistance to exonuclease degradation.
24. (previously presented) The method of claim 23, wherein said plurality of extended nucleic acids comprises nucleic acids of different sequence.

25. (previously presented) The method of claim 24, wherein said different sequence varies by one nucleotide.
26. (previously presented) The method of claim 23, wherein said plurality of extended nucleic acids comprise different lengths.
27. (previously presented) The method of claim 26, wherein said different lengths comprise one nucleotide increments.
28. (previously presented) The method of claim 27, wherein said different lengths comprise more than one nucleotide increments.
29. (previously presented) The method of claim 9, wherein the extended nucleic acid comprises at least one partly double stranded nucleic acid or at least one fully double stranded nucleic acid.
30. (currently amended) The method of claim 9, wherein said ~~at least one~~defined first primer nucleic acid comprises a sequence designed to anneal to a specific sequence comprising said first or second template nucleic acid.
31. (previously presented) The method of claim 9, wherein said ~~at least one~~defined first primer nucleic acid is resistant to cleavage or exonuclease digestion.
32. (previously presented) The method of claim 9, wherein said defined first primer nucleic acid is a plurality of primers.
33. (previously presented) The method of claim 32, wherein said plurality of primers vary in length, sequence, resistance to cleavage or resistance to exonuclease degradation.
34. (previously presented) The method of claim 9, wherein the first extended nucleic acid comprises the primer nucleic acid.
35. (previously presented) The method of claim 9, wherein said first or second extended nucleic acid is a recombinant, mutagenized or chimeric nucleic acid.

36. (previously presented) The method of claim 9, wherein said at least one first single stranded template nucleic acid or said at least one second single stranded template nucleic acid is a plurality of template nucleic acids.
37. (previously presented) The method of claim 9, further comprising the addition of at least one length-altering agent.
38. (previously presented) The method of claim 37, wherein the length-altering agent comprises a nucleotide, a nucleotide derivative, a nucleotide analog, a chemical treatment or a combination thereof.
39. (previously presented) The method of claim 38, wherein said length-altering agent comprises a nucleotide incorporated into said first or second extended nucleic acid.
40. (previously presented) The method of claim 39, wherein said nucleotide comprises at least one ribonucleotide.
41. (previously presented) The method of claim 40, wherein said length-altering agent further comprises treatment with an alkaline condition or a ribonuclease.
42. (previously presented) The method of claim 40, wherein said length-altering agent further comprises treatment with alkaline phosphatase and an exonuclease.
43. (previously presented) The method of claim 38, wherein said length-altering agent comprises a nucleotide derivative incorporated into said extended nucleic acid.
44. (previously presented) The method of claim 38, wherein the length-altering agent comprises a nucleotide analog incorporated into said extended nucleic acid.
45. (previously presented) The method of claim 44, wherein said nucleotide analog comprises at least one  $\alpha$ -phosphorothioate nucleotide.
46. (previously presented) The method of claim 45, wherein said length-altering agent further comprises alkylation of said extended nucleic acid.

47. (previously presented) The method of claim 38, wherein the length-altering agent comprises a chemical treatment of said extended nucleic acid.
48. (previously presented) The method of claim 47, wherein said chemical treatment is a Maxam and Gilbert treatment or variant thereof.
- 49-52. (canceled)
53. (previously presented) A method for creating a nucleic acid comprising the steps of:
- (a) annealing a defined primer nucleic acid to at least one first single stranded template nucleic acid,
  - (b) performing a first extension by extending the primer nucleic acid employing the first template nucleic acid to form an extended nucleic acid,
  - (c) denaturing the extended nucleic acid from the first template nucleic acid,
  - (d) annealing the extended nucleic acid to at least a second single stranded template nucleic acid whose sequence is not identical to the first template nucleic acid,
  - (e) performing a second extension by extending the extended nucleic acid employing the second template nucleic acid to form a twice extended nucleic acid,
  - (f) adding at least one length-altering agent before or during at least one of the first extension or the second extension, and
  - (g) modifying or removing the length-altering agent from the extended nucleic acid, if a further extension is to be performed.
54. (previously presented) The method of claim 53, wherein said length-altering agent comprises at least one ribonucleotide incorporated into said first or second extended nucleic acid.
55. (previously presented) The method of claim 53, wherein said length-altering agent comprises at least one nucleotide analog incorporated into said first or second extended nucleic acid followed by alkylation of said extended nucleic acid.

56. (previously presented) The method of claim 53, wherein said length-altering agent comprises at least one Maxam and Gilbert treatment or variant thereof.
57. (currently amended) The method of claim 53, wherein said length-altering agent is at least one chain-terminating agent, wherein said chain-terminating agent comprises at least one dideoxynucleotide, a or dideoxynucleotide analog ~~or a dideoxynucleotide derivative~~ incorporated into said extended nucleic acid.